

WEST VIRGINIA
DIVISION OF HIGHWAYS



SUBJECT INDEX

CONSTRUCTION
MANUAL

2002

A	<u>Section</u>
Acceptance of Materials	106.1
Contract's Proposed Source of Materials (Form 454).....	106.1.2
Contractor's Quality Control Program	106.1.4
Evidence of Inspection	106.1.3
Independent Assurance Sampling	106.1.6
Verification Sampling and Testing.....	106.1.5
Advertisement, Project.....	102.2
Issuance of Proposal Form	102.2.3
Notice to Contractor	102.2.1
Proposal Form	102.2.2
Aggregate Subbase.....	314
Description of Work.....	314.1.1
Materials and Equipment.....	314.1.2
Construction Considerations	314.2
Records and Daily Reports.....	314.3
Measurement for Payment.....	314.4
Aggregates	704
Definition.....	704.1
Aggregate Inspector Programmed Instruction Manual	704.2
Compaction Inspector Programmed Instruction Manual.....	704.3
Compaction Testing Procedures.....	704.4
Aggregate Sampling Inspector Programmed Instruction Manual	704.5
Air Quality	107.4.8
Discussion	107.4.8.3
Legal Reference.....	107.4.8.1
Purpose	107.4.8.2
Approach Slabs	502
Description of Work.....	502.1.1
Material Requirements	502.1.2
Other Considerations	502.1.3
Construction Operations.....	502.2
Records and Daily Reports.....	502.3
Measurement for Payment.....	502.4
Approval of Off-Site Materials.....	106.2.3
Pre-Approved Source	106.2.3.1
Unapproved Source	106.2.3.2
Approaches, Methods of Estimating Area	A.11
Aprons, Methods of Estimating Area	A.11
Area Measurements, Conversion Factors	A.12
Area of Fillets, Aprons, and Approaches, Methods of Estimating	A.11
Area of Plane Figures.....	A.5
Asphalt Binder Storage and Supply Systems, Hot-Mix Asphalt Base.....	401.2.6
Asphalt Binder Storage Tanks.....	401.2.6.1
Asphalt Binder Pump/Metering Systems	401.2.6.2
Asphalt Binder Measurement/Calibration.....	401.2.6.3
Asphalt, Hot-Mix (HMA) Materials	706
Hot-Mix Asphalt Inspector Programmed Instruction Manual.....	706.1
Compaction Testing Procedures.....	706.2

	<u>Section</u>
Asphalt Specific Gravity and Weight Per Gallon	A.14
Assistant Commissioner, WVDOT	101.1.6
EEO Officer	101.1.6.3
Hearing Examiner	101.1.6.1
Public Affairs Division	101.1.6.2
Award and Execution of Contract	103
Letting, Award, and Execution of Contract	103.2
Pre-Construction Activities	103.3
Project Insurance	103.4
 B	
Batch-Mix-Plant, Hot-Mix Asphalt Base	401.2.8
Aggregate Dryer/Burner System	401.2.8.1
Screening Unit	401.2.8.2
Hot Bins	401.2.8.3
Weigh Hopper/Weigh Bucket	401.2.8.4
Pugmill Mixer	401.2.8.5
Production Considerations	401.2.8.6
Batch Proportioning Scales	708.1
Frequency of Checking and Documentation	708.1.2
Procedure for Checking Zero Balance and Sensitivity	708.1.3
Procedure for Checking Accuracy	708.1.4
Procedure for Checking Scales Using Load Cells	708.1.5
Bearings and Expansion Devices	615.2.3
Bridge Expansion and Contraction	615.2.3.1
Bearing Devices	615.2.3.2
Expansion Devices	615.2.3.3
Installation and Adjustment	615.2.3.4
Inspection Guidelines	615.2.3.5
Bid Preparation and Acceptance	102.4
Bid Posting Schedule	102.4.4
Bid Preparation Requirements	102.4.1
Expedite BID Software (EBS)	102.4.2
Receipt of Bids	102.4.3
Bidding Requirements and Conditions	102
Bid Preparation Requirements	102.4.1
Contractor Prequalification	102.1
Pre-Bid Activities	102.3
Project Advertisement	102.2
Bituminous Concrete – Coverage Per Ton	A.13
Bituminous Underseal for Concrete Pavement	504
Description of Work	504.1.1
Materials Requirements	504.1.2
Weather Limitations	504.1.3
Hazards	504.1.4
Other Considerations	504.1.5
Equipment Considerations	504.2

	<u>Section</u>
Construction Operations.....	504.3
Records and Daily Reports.....	504.4
Measurement for Payment.....	504.5
Borrow Excavation	211
Description of Work.....	211.1.1
Protection and Preservation of Property.....	211.1.2
Clearing and Grubbing	211.1.3
Drainage	211.1.4
Erosion and Sediment Control.....	211.1.5
Dust Control	211.1.6
Blasting Considerations.....	211.1.7
Hauling Considerations	211.1.8
Site Restoration	211.1.9
Historic and Archeological Findings.....	211.1.10
Materials and Equipment.....	211.1.11
Hazards.....	211.2
Justification and Approval.....	211.3.1
Site Selection and Approval	211.3.2
Classification, Placement, and Compaction	211.3.3
Records and Daily Reports.....	211.4
Measurement for Payment.....	211.5
Bridge Decks, Overlaying.....	679
Description of Work.....	679.1.1
Materials Considerations.....	679.1.2
Inspection Guidelines	679.2
Records and Daily Reports.....	679.3
Brooming and Rolling Operation.....	405.2.4
Brooming.....	405.2.4.1
Rolling.....	405.2.4.2
Building Demolition	202
Asbestos Survey	202.1.3
Description of Work.....	202.1.1
Disposal of Materials.....	202.5
Extent of Removal.....	202.3
Hazards	202.2
Historic and Archeological Findings.....	202.1.4
Materials and Equipment.....	202.1.5
Measurement for Payment.....	202.7
Records and Daily Reports.....	202.6
Rodent and Insect Control.....	202.4
Utilities	202.1.2
Business Manager, WVDOT	101.1.2
Finance Division.....	101.1.2.1
Information Services	101.1.2.2
Office Services	101.1.2.3

C	<u>Section</u>
Change Orders	105.6.7
LME Force Account Work Order.....	105.6.7.3
Record of Contact.....	105.6.7.1
Supplemental Agreement	105.6.7.2
Change Orders, Record of Contact	110
Change Orders	110.3
Legal Basis	110.1.1
Overview of Purpose	110.1.2
Project Records System.....	110.1.4
Record of Contact.....	110.2
Types of Change Orders.....	110.1.3
Checking Accuracy of Meter Proportioning.....	708.2
Meters Or Pumps for Bituminous Materials	708.2.1
Water Meter.....	708.2.2
Admixture Dispenser.....	708.2.3
Checking Batch Proportioning Scales.....	708.1
Frequency of Checking and Documentation	708.1.2
Procedure for Checking Zero Balance and Sensitivity.....	708.1.3
Procedure for Checking Accuracy.....	708.1.4
Procedure for Checking Scales Using Load Cells.....	708.1.5
Claims	105.4
Cleaning Culverts, Inlets, and Manholes	240
Description of Work.....	240.1.1
Materials and Equipment.....	240.1.2
Public Safety Hazards	240.2
Cleaning Culverts, Inlets, and Manholes.....	240.3
Records and Daily Reports.....	240.4
Measurement for Payment.....	240.5
Clearing and Grubbing.....	201
Description of Work.....	201.1.1
Disposal of Materials.....	201.5
Embankment Areas	201.4
Erosion and Sediment Control.....	201.1.7
Excavation Areas.....	201.3
Hazards.....	201.2
Materials and Equipment.....	201.1.8
Measurement for Payment.....	201.7
Off-Site Property Agreements.....	201.1.4
On- and Off-Site Drainage	201.1.6
Plans-in-Hand Meeting.....	201.1.3
Protection and Preservation of Property.....	201.1.2
Records and Daily Reports.....	201.6
Utilities	201.1.5
Cold-Feed Systems, Hot-Mix Asphalt Base	401.2.5
Aggregate Stockpiles.....	401.2.5.1
Cold-Feed Bins.....	401.2.5.2
Total and Proportional Aggregate Flow	401.2.5.3
Feeder Conveyors.....	401.2.5.4

	<u>Section</u>
Gathering Conveyor	401.2.5.5
Scalping Screen	401.2.5.6
Charging Conveyor	401.2.5.7
Weigh-Bridge Control System	401.2.5.8
Flow Calibration Sampling	401.2.5.9
Recycled Asphalt Pavement (RAP).....	401.2.5.10
Combustible Material Disposal on Right-of-Way	201.5.2
Burning	201.5.2.1
Burying.....	201.5.2.2
Chipping.....	201.5.2.3
Compaction, Earth Embankment	207.5.5
Stability of Embankment.....	207.5.5.1
Control of Compaction	207.5.5.2
Compaction Equipment.....	207.5.5.3
Compaction Operations, HMA	401.3.7
Thickness and Temperature Considerations.....	401.3.7.1
Roller Pattern.....	401.3.7.2
Roller Speed and Operation.....	401.3.7.3
Vibratory Roller Operation.....	401.3.7.4
Joint Construction.....	401.3.7.5
Quality Considerations	401.3.7.6
Completion of Project and Final Inspection	114
Final Review and Verification of Project.....	114.1
Final Inspection	114.2
Punch List.....	114.3
Concrete Bridge Decks, Overlaying	679
Description of Work	679.1.1
Materials Considerations.....	679.1.2
Inspection Guidelines	679.2
Records and Daily Reports.....	679.3
Concrete Curing Operation	601.6.5
Importance of Curing	601.6.5.1
Curing Period	601.6.5.2
Use of Linseed Oil.....	601.6.5.3
Use of Epoxy Resin Coating	601.6.5.4
Concrete Mix Adjustments, Field Testing	601.3.3
Field Laboratory	601.3.3.1
Adjusting Concrete Mix Consistency	601.3.3.2
Adding Water to Concrete Batches	601.3.3.3
Adjusting Air Content in Concrete Batches	601.3.3.4
Adjusting Concrete Mix Yield	601.3.3.5
Adjusting “Total Solids A” in Concrete Batches	601.3.3.6
Concrete Pavement Rehabilitation.....	550
Description of Work	550.1.1
Material Requirements	550.1.2
Recycling Considerations.....	550.1.3
Other Considerations.....	550.1.4
Rehabilitation Methods	550.2

	<u>Section</u>
Records and Daily Reports.....	550.3
Measurement for Payment.....	550.4
Concrete Pavement Repair.....	506
Description of Work.....	506.1.1
Material Requirements.....	506.1.2
Quality Acceptance Considerations.....	506.1.3
Protection of Pavement.....	506.1.4
Other Considerations.....	506.1.5
Equipment Considerations.....	506.2
Concrete Production.....	506.3
Pre-Patching Operations.....	506.4
Patching Operations.....	506.5
Records and Daily Reports.....	506.6
Measurement for Payment.....	506.7
Concrete Pavement, Sealing Joints and Cracks.....	503
Description of Work.....	503.1.1
Material Requirements.....	503.1.2
Other Considerations.....	503.1.3
Equipment Considerations.....	503.2
Construction Operations.....	503.3
Records and Daily Reports.....	503.4
Measurement for Payment.....	503.5
Concrete, Placement.....	501.5.1
Lane-By-Lane Construction.....	501.5.1.1
Slip-Form Paving Considerations.....	501.5.1.2
Fixed-Form Paving Considerations.....	501.5.1.3
Placement Near Joints.....	501.5.1.4
Concrete, Portland Cement.....	705
Portland Cement Concrete Inspector Programmed Instruction Manual.....	705.1
Total, Absorbed and Free Moisture.....	705.2
Consolidation Operations, Structural Concrete.....	601.5
Mix Segregation.....	601.5.1
Use of Chutes and Troughs.....	601.5.2
Pumping of Concrete.....	601.5.3
Protection of Reinforcing Steel.....	601.5.4
Placement of Concrete in Bridge Deck Formwork.....	601.5.5
Placement of Concrete in Architectural Formwork.....	601.5.6
Placement of Concrete in Parapets.....	601.5.7
Placement of Concrete Under Water.....	601.5.8
Vibration and Consolidation of Concrete.....	601.5.9
Consolidation, PCC.....	501.5.5
Machine Methods.....	501.5.5.1
Hand Methods.....	501.5.5.2
Consolidation of Concrete.....	501.5.5.3
Construction Considerations, Crack and Pothole Repair.....	507.2
Small Cracks.....	507.2.1
Large Cracks and Potholes.....	507.2.2
Construction Considerations, Crushed Aggregate Base Course.....	307.2

	<u>Section</u>
Subgrade/Subbase Preparation	307.2.1
Placement	307.2.2
Compaction	307.2.3
Checking Grade and Thickness	307.2.4
Maintenance	307.2.5
Construction Considerations, Open-Graded Free-Draining Base Course.....	311.2
Subgrade/Subbase Preparation	311.2.1
Placement	311.2.2
Compaction and Curing.....	311.2.3
Checking Grade and Thickness	311.2.4
Maintenance	311.2.5
Construction Operations, Sealing Joints and Cracks in Concrete Pavement	503.3
Sealant Preparation.....	503.3.1
Joint and Crack Preparation.....	503.3.2
Sealing Operation	503.3.3
Construction Considerations, Traffic Bound Base Course Or Shoulder.....	308.2
Surface Preparation	308.2.1
Placement (Reconstruction).....	308.2.2
Compaction	308.2.3
Checking Grade and Thickness	308.2.4
Maintenance	308.2.5
Construction Layout Stakes	639
Description of Work	639.1.1
Material Considerations.....	639.1.2
Inspection Guidelines	639.2
Records and Daily Reports.....	639.3
Construction Noise.....	107.4.7
Discussion	107.4.7.3
Legal References	107.4.7.1
Purpose	107.4.7.2
Construction Operations, Approach Slabs	502.2
Backfill and Base Course Compaction.....	502.2.1
Setting of Forms	502.2.2
Paving Notch Construction.....	502.2.3
Reinforcement and Keys	502.2.4
Expansion Joints.....	502.2.5
Placement of Concrete.....	502.2.6
Consolidation of Concrete.....	502.2.7
Curb Construction	502.2.8
Form Removal.....	502.2.9
Joint Construction.....	502.2.10
Construction Operations, Bituminous Underseal.....	504.3
Drilling Operation	504.3.1
Surface Preparation	504.3.2
Bituminous Material Preparation	504.3.3
Pumping Operation.....	504.3.4
Cleanup.....	504.3.5
Construction Operations, Surface Treatments	405.2

	<u>Section</u>
Surface Preparation	405.2.1
Application of Bituminous Material.....	405.2.2
Application of Aggregate Material.....	405.2.3
Brooming and Rolling Operation	405.2.4
Construction Operations, Tack Coat.....	408.2
Surface Preparation	408.2.1
Application of Bituminous Material.....	408.2.2
Application of Aggregate Material.....	408.2.3
Broom Dragging/Sweeping.....	408.2.4
Joint Construction.....	408.2.5
Continuous-Mix Plant, Hot-Mix Asphalt Base.....	401.2.9
Cold-Feed System	401.2.9.1
Aggregate Dryer/Burner System	401.2.9.2
Screening Unit.....	401.2.9.3
Hot Bins.....	401.2.9.4
Pugmill Mixer/Holding Hopper	401.2.9.5
Production Considerations	401.2.9.6
Contract Changes and Incidentals.....	104.1
Changes in Plans, Quantities, and Work	104.1.2
Contract Intent and Partnering.....	104.1.1
Disposition of Excess Materials	104.1.3
Incidentals	104.1.5
Value Engineering Proposals	104.1.4
Contract Specifications, Federal Highway Administration	101.6
Availability.....	101.6.3
Context of Responsibilities.....	101.6.2
Order of Precedence	101.6.1
Contract Time Extensions.....	105.3.4
Change Orders.....	105.3.4.3
Contracts With Schedules.....	105.3.4.4
Contracts Without Schedules, Federally Funded Projects	105.3.4.5
Contracts Without Schedules, State Funded Projects on NHS.....	105.3.4.5
Contracts Without Schedules: State Funded Projects Off NHS	105.3.4.6
Time Impact Analysis/Summary.....	105.3.4.2
Contractor Prequalification	102.1
Contractor Prequalification Statement	102.1.2
Prequalification Process	102.1.1
Control of Materials.....	106
Acceptance of Materials.....	106.1
Compliance With Specifications.....	701.2
Documentation for Expenditure of Public Funds.....	701.4
QC/QA and Materials Management.....	106.2
Uniform Relations With Contractors.....	701.3
Control of Work.....	105
Claims.....	105.4
Daily Reports (DR)	105.5
Encroachments and Non-Conformance.....	105.7
PRS Workflow	105.6

	<u>Section</u>
Roles and Responsibilities.....	105.1
Schedules and Time Extensions.....	105.3
Utilities.....	105.2
Controlled Low-Strength Material.....	219
Description of Work.....	219.1.1
Materials and Equipment.....	219.1.2
Placement.....	219.2
Records and Daily Reports.....	219.3
Measurement for Payment.....	219.4
Conversion Factors – Area Measurements.....	A.8
Conversion Factors – Inches to Decimals of A Foot.....	A.11
Conversion Factors – Length Measurements.....	A.7
Conversion Factors – Miscellaneous.....	A.12
Conversion Factors – Volume Measurements.....	A.9
Conversion Factors – Weight Measurements.....	A.10
Coverage Per Ton, Bituminous Concrete.....	A.13
Crack and Pothole Repair.....	507
Description of Work.....	507.1.1
Material Requirements.....	507.1.2
Other Considerations.....	507.1.3
Construction Considerations.....	507.2
Records and Daily Reports.....	507.3
Measurement for Payment.....	507.4
Cracking and Seating, Concrete Pavement Rehabilitation.....	550.2.5
Cracking Operation.....	550.2.5.1
Seating Operation.....	550.2.5.2
Pre-Overlay Considerations.....	550.2.5.3
Overlay Operation.....	550.2.5.4
Crushed Aggregate Base Course.....	307
Description of Work.....	307.1.1
Materials and Equipment.....	307.1.2
Construction Considerations.....	307.2
Records and Daily Reports.....	307.3
Measurement for Payment.....	307.4
Culvert Placement.....	604.2.2
Small Streams.....	604.2.2.2
Culvert Skew.....	604.2.2.3
Culvert Grade.....	604.2.2.4
Marking Culvert Location.....	604.2.2.5
Culverts, Cleaning.....	240
Description of Work.....	240.1.1
Materials and Equipment.....	240.1.2
Public Safety Hazards.....	240.2
Cleaning Culverts, Inlets, and Manholes.....	240.3
Records and Daily Reports.....	240.4
Measurement for Payment.....	240.5
Curbs, Combination Curbs.....	610
Requirements.....	610.1

	<u>Section</u>
Concrete Curbs and Medians.....	610.2.1
Asphalt Curbing	610.2.2
Records and Daily Reports.....	610.3
Curing Methods and Procedures, PCC	501.5.10
Curing Considerations	501.5.10.1
Burlap Mats/Straw.....	501.5.10.2
Waterproof Sheet Barriers.....	501.5.10.3
Impervious Membrane	501.5.10.4
Curing Operations, Structural Concrete.....	601.6
Form Removal.....	601.6.1
Removal of Form Ties.....	601.6.2
Plugging Holes for Anchor Bolts	601.6.3
Finishing Concrete Surfaces.....	601.6.4
Concrete Curing Operation.....	601.6.5
Current Voucher Estimates	112.2
Materials Delivered Not in Place	112.2.3
Overruns	112.2.4
Preparation and Submission	112.2.1
Retained Percentages.....	112.2.5
Unclassified Excavation.....	112.2.2

D

Daily Report Entries	105.5.4, 111.2
Aggregates.....	111.2.7
Box Culverts and Structures.....	111.2.4
Clearing and Grubbing	111.2.1
Concrete Sidewalks	111.2.9
IDR Entries.....	105.5.4.2
Integrity of Entries.....	111.2.12.1
Liquid Asphalt/Bituminous Material.....	111.2.6
Materials Delivered Not in Place (MDNIP).....	111.2.11
Portland Cement Concrete Pavement.....	111.2.5
Review of Daily Reports	105.5.4.3
Rounding Numbers.....	111.2.12.2
SDR Entries.....	105.5.4.1
Seeding and Mulching.....	111.2.10
Unclassified Excavation.....	111.2.2
Underdrains	111.2.3
Weigh Tickets.....	111.2.8
Daily Reports (DR), Project Records.....	111
Concurrent Project Finalization.....	111.3.1
Daily Report Entries.....	105.5.4
Daily Report Entries	111.2
DOH Personnel Responsibilities	111.1.1
DOH Personnel Responsibilities	111.3.3
Form 442 Inspector's Daily Reports	105.5.3, 111.1.3
Maintaining Project IDRS and Field Survey Books.....	111.1.4

	<u>Section</u>
Overview of Concurrent Finalization Process.....	111.3.2
Project Data.....	111.1.2
Project Files.....	111.1.5
Project Reference Materials.....	111.1.6
Purpose.....	105.5.1
Responsibilities.....	105.5.2
Review and Verification of Daily Reports.....	111.3
Review of “Current” Quantity Validation Report.....	111.3.5
Sample Supervisor and Inspector Daily Reports.....	A.22
Verification of Daily Report Entries.....	111.3.4
Decks, Overlaying of Concrete Bridge.....	679
Description of Work.....	679.1.1
Materials Considerations.....	679.1.2
Inspection Guidelines.....	679.2
Records and Daily Reports.....	679.3
Density and Viscosity of Water at Various Temperatures.....	A.18
Density Tests (in-Place) for Embankment and Backfill.....	707
Equipment.....	707.2
Selecting Test Locations for Embankment.....	707.3
Compaction Testing Procedures.....	707.4
Deputy Commissioner, WVDOT.....	101.1.1
Economic Development.....	101.1.1.2
Legislative Services.....	101.1.1.3
Planning And Research Division.....	101.1.1.1
Deputy State Highway Engineer — Development, WVDOT.....	101.1.8
Contract Administration Division.....	101.1.8.4
Engineering Division.....	101.1.8.2
Materials Control, Soils and Testing Division.....	101.1.8.5
Right-of-Way Division.....	101.1.8.1
Traffic Engineering Division.....	101.1.8.3
Deputy State Highway Engineer — Operations, WVDOT.....	101.1.7
Enforcement Division.....	101.1.7.2
Equipment Division.....	101.1.7.3
Maintenance Division.....	101.1.7.1
Regional Maintenance Engineers.....	101.1.7.4
Dismantling Structures.....	203
Bridge Demolition/Dismantling Plan.....	203.1.2
Description of Work.....	203.1.1
Disposal of Materials.....	203.3
Hazards.....	203.2
Materials and Equipment.....	203.1.3
Measurement for Payment.....	203.5
Records and Daily Reports.....	203.4
Disposal of Materials.....	201.5, 207.4
Combustible Material Disposal on Right-of-Way.....	201.5.2
Material Disposal Off Right-of-Way.....	201.5.4
Merchantable Timber.....	201.5.1
Non-Combustible Material Disposal on-Right-of-Way.....	201.5.3

	<u>Section</u>
Salvaging Topsoil.....	207.4.2
Suitable Material.....	207.4.1
Surplus Material.....	207.4.5
Unsuitable Material.....	207.4.3
Waste and Waste Sites.....	207.4.4
Distribution of Plans and Plan Revisions.....	103.3.1
District/Project Organization, WVDOT.....	101.1.9
District Construction Operations.....	101.1.9.2
District Maintenance Operations.....	101.1.9.1
Project Organization.....	101.1.9.3
Ditches, Shoulders and.....	229
Description of Work.....	229.1.1
Materials and Equipment.....	229.1.2
Public Safety Hazards.....	229.2
Shoulders and Ditches.....	229.3
Records and Daily Reports.....	229.4
Measurement for Payment.....	229.5
Dividers, Precast Concrete Traffic.....	611
Requirements.....	611.1
Inspection Guidelines.....	611.2
Records and Daily Reports.....	611.3
Documentation for Expenditure of Public Funds.....	701.4
Documentation and Payment.....	701.4.1
Daily Reports.....	701.4.2
Project Records System (PRS).....	701.4.3
Contract Administration File System (E440).....	701.4.4
Weekly Suppliers Report (Form 441).....	701.4.5
Laboratory Numbers.....	701.4.6
Basis for Acceptance.....	701.4.7
Drilled Caisson Foundations.....	625
Requirements.....	625.1
Inspection Guidelines.....	625.2
Records and Daily Reports.....	625.3
Measurement for Payment.....	625.4
Dryer-Drum Mixer, Hot-Mix Asphalt Base.....	401.2.7
New Aggregate Feed.....	401.2.7.1
RAP Feed.....	401.2.7.2
Mineral Filler Feed.....	401.2.7.3
Asphalt Binder Feed.....	401.2.7.4
Burner System.....	401.2.7.5
Dual-Zone Configuration.....	401.2.7.6
HMA Discharge.....	401.2.7.7
Production Considerations.....	401.2.7.8
Duties of An Inspector, Materials Control.....	702.4
Inspector's Daily Report (Form 442-Idr).....	702.4.1
Evidence of Inspection.....	702.4.2
Quality Control Plan.....	702.4.3

E	<u>Section</u>
Earth Embankment.....	207.5
Embankment Foundation Preparation	207.5.2
Uniformity of Material	207.5.3
Hauling and Placement.....	207.5.4
Compaction	207.5.5
Electrical Work	631
Description of Work	631.1.1
Materials Considerations	631.1.2
Inspection Guidelines	631.2
Records and Daily Reports	631.3
Embankment, Excavation and.....	207
Controlled Blasting Plan	207.1.7
Description of Work	207.1.1
Disposal of Materials.....	207.4
Dust Control	207.1.5
Earth Embankment	207.5
Erosion and Sediment Control.....	207.1.4
Finishing Earthwork	207.8
Hauling Considerations	207.1.6
Hazards	207.2
Historic and Archeological Findings.....	207.1.8
Materials and Equipment.....	207.1.9
Measurement for Payment.....	207.10
On- and Off-Site Drainage	207.1.3
Protection and Preservation of Property	207.1.2
Records and Daily Reports	207.9
Roadway Excavation	207.3
Rock Embankment	207.6
Select Material Embankment	207.7
Embankment Areas	201.4
Clearing and Grubbing in Embankment Areas.....	201.4.1
Maintenance of Ground Surface.....	201.4.2
Emission-Control Systems, Hot-Mix Asphalt Base	401.2.10
Purpose and Classification	401.2.10.1
Types of Systems.....	401.2.10.2
Production Considerations	401.2.10.3
Employment and Labor Issues.....	107.3
Equal Employment Opportunity (EEO)	107.3.1
Hatch Act (Project Procedure).....	107.3.4
Labor Regulations	107.3.3
On-The-Job Training.....	107.3.2
Encroachments and Non-Conformance	105.7
EPRS for Non-Conforming Materials	105.7.2
Right-of-Way Encroachments	105.7.1
Environmental Issues	107.4
Air Quality.....	107.4.8
Construction Noise	107.4.7
Coordination With Environmental Agencies	107.4.3

	<u>Section</u>
Hazardous Waste.....	107.4.5
Historic and Archeological Preservation.....	107.4.6
Permits.....	107.4.9
Pre-Construction Activities	107.4.2
Water Quality	107.4.4
Equations, Slope	A.3
Equipment Considerations, Piling.....	616.2.3
Selection and Acceptance.....	616.2.3.1
Drop Hammers	616.2.3.2
Power Hammers	616.2.3.3
Pile Caps and Driving Heads.....	616.2.3.4
Pile Driving Leads.....	616.2.3.5
Equipment Considerations, Surface Treatments	405.1.5
Bituminous Material Distributor	405.1.5.1
Hand Spraying Equipment	405.1.5.2
Aggregate Spreader	405.1.5.3
Compaction Equipment.....	405.1.5.4
Equipment, Controlled Low Strength	219.1.2
Quality Control.....	219.1.2.1
Mix Design.....	219.1.2.2
Equipment, Crushed Aggregate Base Course.....	307.1.2
Materials.....	307.1.2.1
Quality Control and Acceptance	307.1.2.2
Equipment	307.1.2.3
Equipment, Excavation and Embankment	207.1.9
Quality Control Plan.....	207.1.9.1
Quality Control Testing.....	207.1.9.2
Equipment and Special Assignments, Executive Assistants for, WVDOT	101.1.5
Equipment and Vehicles, Federal Highway Administration.....	101.5
Engineering & Materials Equipment.....	101.5.1
Vehicular Equipment.....	101.5.2
Erection Considerations, Field Assembly.....	615.2.5
Positioning Steel Members.....	615.2.5.1
Drift Pins and Temporary Bolts	615.2.5.2
Allowable Connection Adjustments.....	615.2.5.3
High-Strength Bolts.....	615.2.5.4
Erosion Control, Matting	655
Description of Work.....	655.1.1
Materials Considerations.....	655.1.2
Inspection Guidelines	655.2
Records and Daily Reports.....	655.3
Estimates	112
Voucher Estimate (Form 409).....	112.1.1
Non-Participating Statement (Form 410)	112.1.2
Lump-Sum Bid Items	112.1.3
Multi-Authorization Projects.....	112.1.4
Current Voucher Estimates.....	112.2
Final Voucher Estimate	112.3

	<u>Section</u>
Excavation and Embankment	207
Controlled Blasting Plan	207.1.7
Description of Work	207.1.1
Disposal of Materials	207.4
Dust Control	207.1.5
Earth Embankment	207.5
Erosion and Sediment Control	207.1.4
Finishing Earthwork	207.8
Hauling Considerations	207.1.6
Hazards	207.2
Historic and Archeological Findings	207.1.8
Materials and Equipment	207.1.9
Measurement for Payment	207.10
On- and Off-Site Drainage	207.1.3
Protection and Preservation of Property	207.1.2
Records and Daily Reports	207.9
Roadway Excavation	207.3
Rock Embankment	207.6
Select Material Embankment	207.7
Excavation Areas	201.3
Clearing and Grubbing in Excavation Areas	201.3.1
Extent of Removal	201.3.2
Selective Clearing and Thinning	201.3.3
Excavation for Footings	212.3
Footing Elevation	212.3.1
Foundation Surface Preparation	212.3.2
Backfilling Around Structures	212.3.3
Excavation, Roadway	207.3
Pre-Wetting	207.3.2
Controlled Blasting	207.3.3
Benches and Transition Points	207.3.4
Slides and Slipouts	207.3.5
Conduit	207.3.6
Excavation, Structure, Rock, and Wet	212
Description of Work	212.1.1
Protection and Preservation of Property	212.1.2
Shoring, Bracing and Cofferdams	212.1.3
Drainage	212.1.4
Erosion and Sediment Control	212.1.5
Blasting Considerations	212.1.6
Materials and Equipment	212.1.7
Hazards	212.2
Excavation for Footings	212.3
Disposal of Materials	212.4
Records and Daily Reports	212.5
Measurement for Payment	212.6
Execution of Contract	103
Letting, Award, and Execution of Contract	103.2

	<u>Section</u>
Pre-Construction Activities	103.3
Project Insurance	103.4
Expansion Devices	615.2.3
Bridge Expansion and Contraction	615.2.3.1
Bearing Devices	615.2.3.2
Expansion Devices	615.2.3.3
Installation and Adjustment	615.2.3.4
Inspection Guidelines	615.2.3.5
Expedite BID Software (EBS)	102.4.2
Authorization	102.4.2.1
EBS Bid Diskette	102.4.2.3
EBS Schedule of Item Sheets	102.4.2.2
 F	
Falsework, Formwork and, Structural Concrete	601.4.1
General Considerations	601.4.1.1
Beam and Arch Formwork	601.4.1.2
Bridge Deck Formwork	601.4.1.3
Architectural Formwork	601.4.1.4
Formwork for Concrete Walls	601.4.1.5
Formwork for Parapet Walls and Median Barriers	601.4.1.6
Form Cleaning	601.4.1.7
Application of Release Agent	601.4.1.8
Falsework Plans, Structural Concrete	601.1.5
General Considerations	601.1.5.1
Stay-in-Place Forms for Bridge Decks	601.1.5.2
Fatal Crash Review Team	104.2.5
Final Report	104.2.5.5
Notification Responsibilities	104.2.5.2
Preliminary Documentation	104.2.5.3
Review Process	104.2.5.4
Team Members	104.2.5.1
Federal Highway Administration	101.2
Contract Specifications	101.6
Equipment and Vehicles	101.5
FHWA/West Virginia Relationship	101.2.2
Materials Procedures (MPS)	101.7
Personnel Responsibilities	101.3
Personnel Training and Certification	101.4
FHWA Relationships	101.2.3
FHWA, West Virginia Relationship with	101.2.2
FHWA Role in Construction	101.2.2.3
Project Types	101.2.2.2
Stewardship Agreement	101.2.2.1
Field Assembly and Erection Considerations	615.2.5
Positioning Steel Members	615.2.5.1
Drift Pins and Temporary Bolts	615.2.5.2

	<u>Section</u>
Allowable Connection Adjustments	615.2.5.3
High-Strength Bolts	615.2.5.4
Field Inspection Guidelines, Steel Structures	615.2
Inspection Upon Delivery	615.2.1
Falsework	615.2.2
Bearings and Expansion Devices	615.2.3
Field Welding Considerations	615.2.4
Field Assembly and Erection Considerations	615.2.5
Field Testing and Concrete Mix Adjustments	601.3.3
Field Laboratory	601.3.3.1
Adjusting Concrete Mix Consistency	601.3.3.2
Adding Water to Concrete Batches	601.3.3.3
Adjusting Air Content in Concrete Batches	601.3.3.4
Adjusting Concrete Mix Yield	601.3.3.5
Adjusting "Total Solids A" in Concrete Batches	601.3.3.6
Field Welding Considerations	615.2.4
Welding Procedure	615.2.4.1
Quality Welds	615.2.4.2
Defective Welds	615.2.4.3
Inspection Guidelines	615.2.4.4
Fillets, Methods of Estimating Area	A.6
Final Documentation	113.1
Overview	113.1.1
Working Time Report (Form 458)	113.1.2
Contractor's Performance Report (Form 420)	113.1.3
Materials and Labor Used (Form FHWA 47)	113.1.4
Contract Completion (Form 416)	113.1.5
Letter of Certification of Materials	113.1.6
As-Built Plans	113.1.7
Quantity Validation Report (With Overruns, Underruns, Reasons)	113.1.8
Tax Releases	113.1.9
Final Grade Conditioning, PCC	501.3.3
Final Shaping	501.3.3.1
Compaction Operation	501.3.3.2
Grade Checks	501.3.3.3
Maintenance of Grade	501.3.3.4
Moisture Considerations	501.3.3.5
Final Inspection	114
Final Review and Verification of Project	114.1
Final Inspection	114.2
Punch List	114.3
Final Surveys	639.2.12
Final Section Locations	639.2.12.2
Final Section Measurements	639.2.12.3
Terminal Points	639.2.12.4
Intermediate Cross-Sections	639.2.12.5
Slides	639.2.12.6
Benches	639.2.12.7

	<u>Section</u>
Structures	639.2.12.8
Field Checking Elevations of Ties	639.2.12.9
Field Investigation of Differences	639.2.12.10
Miscellaneous Measurements	639.2.12.11
Plotting and Compaction	639.2.12.12
Final Voucher Estimate.....	112.3
Affidavit of Acceptance	112.3.4
Contract Adjustments	112.3.3
Final Estimate Processing	112.3.1
Unclassified Excavation	112.3.2
Finishing and Curing Operations, Structural Concrete	601.6
Form Removal	601.6.1
Removal of Form Ties.....	601.6.2
Plugging Holes for Anchor Bolts	601.6.3
Finishing Concrete Surfaces.....	601.6.4
Concrete Curing Operation.....	601.6.5
Finishing Earthwork.....	207.8
Earth Roads	207.8.1
Subgrade.....	207.8.2
Slopes, Shoulders, Ditches	207.8.3
Engineer Fabric	207.8.4
Temporary Surcharge	207.8.5
Fixed-Form Paving Equipment, PCC	501.4.2
Mechanical Spreader	501.4.2.1
Transverse Finishing Machine	501.4.2.2
Longitudinal Float Finisher	501.4.2.3
Transverse Float Finisher	501.4.2.4
Flexible Pipe Culverts.....	604.2.5
Material Inspection.....	604.2.5.1
Handling Considerations	604.2.5.2
Strutting Considerations	604.2.5.3
Floating Operation, PCC.....	501.5.6
Machine Methods.....	501.5.6.1
Hand Methods	501.5.6.2
Form 403, Subcontracting Request.....	108.1.2
Documentation Requirements	108.1.2.2
Review and Approval	108.1.2.3
Submittal	108.1.2.1
Form 409 Voucher Estimate	112.1.1
Form 410 Non-Participating Statement	112.1.2
Form 416 Contract Completion	113.1.5
Form 420 Contractor's Performance Report.....	113.1.3
Form 441 Weekly Suppliers Report.....	701.4.5
Form 442 Inspector's Daily Reports.....	105.5.3, 111.1.3, 702.4.1, A.22
Form 454 Contract's Proposed Source of Materials.....	106.1.2
Form 458 Working Time Report	113.1.2
Form FHWA 47 Materials and Labor Used.....	113.1.4
Form Removal, Structural Concrete	601.6.1

	<u>Section</u>
Compressive Strength Considerations.....	601.6.1.1
Raising Column Forms.....	601.6.1.2
Stay-in-Place Bridge Deck Forms.....	601.6.1.3
Removal of Architectural Formwork.....	601.6.1.4
Formwork and Falsework, Structural Concrete.....	601.4.1
General Considerations.....	601.4.1.1
Beam and Arch Formwork.....	601.4.1.2
Bridge Deck Formwork.....	601.4.1.3
Architectural Formwork.....	601.4.1.4
Formwork for Concrete Walls.....	601.4.1.5
Formwork for Parapet Walls and Median Barriers.....	601.4.1.6
Form Cleaning.....	601.4.1.7
Application of Release Agent.....	601.4.1.8
Formwork and Falsework Plans, Structural Concrete.....	601.1.5
General Considerations.....	601.1.5.1
Stay-in-Place Forms for Bridge Decks.....	601.1.5.2
Foundation Protection.....	218
Description of Work.....	218.1.1
Materials and Equipment.....	218.1.2
Slope Protection.....	218.2
Foundation Protection.....	218.3
Records and Daily Reports.....	218.4
Measurement for Payment.....	218.5
Functions, Trigonometric.....	A.1
Furnishing and Placing Topsoil.....	651
Description of Work.....	651.1.1
Materials Considerations.....	651.1.2
Inspection Guidelines.....	651.2
Records and Daily Reports.....	651.3
 G	
Grinding, Grooving, and Milling, Concrete Pavement Rehabilitation.....	550.2.4
Diamond Grinding.....	550.2.4.1
Diamond Grooving.....	550.2.4.2
Milling.....	550.2.4.3
Ground Cover Planting.....	653
Description of Work.....	653.1.1
Materials Considerations.....	653.1.2
Inspection Guidelines.....	653.2
Records and Daily Reports.....	653.3
Guardrail.....	607
Description of Work.....	607.1.1
Types of Guardrail.....	607.1.2
Material Considerations.....	607.1.3
Inspection Guidelines.....	607.2
Records and Daily Reports.....	607.3
Gutters.....	610

	<u>Section</u>
Requirements	610.1
Concrete Curbs and Medians	610.2.1
Asphalt Curbing	610.2.2
Records and Daily Reports	610.3
 H	
Hardened Concrete, Characteristics	601.3.2
Compressive Strength of Concrete	601.3.2.1
Wear Resistance of Concrete Surfaces	601.3.2.2
Concrete Durability	601.3.2.3
Permeability of Concrete	601.3.2.4
Hauling and Placement, Earth Embankment	207.5.4
Lift Thickness	207.5.4.2
Moisture Content	207.5.4.3
Hauling Considerations, Excavation and Embankment	207.1.6
Haul Roads	207.1.6.1
Protection of Curtain Walls	207.1.6.2
Hauling Considerations, PCC	501.2.7
Truck Types and Maintenance	501.2.7.1
Material Segregation Considerations	501.2.7.2
Haul Time Considerations	501.2.7.3
Hazardous Waste	107.4.5
Discussion	107.4.5.3
Legal References	107.4.5.1
Purpose	107.4.5.2
Hazards	201.2, 207.2
Fire Hazards	201.2.4
Poisonous Plants	201.2.5
Public Safety	201.2.1, 207.2.1
Slide and Trench Areas	207.2.3
Tall Timbered Regions	201.2.3
Use of Explosives	201.2.2, 207.2.2
Highway Drainage Systems	604.1.4
Cross Slopes	604.1.4.1
Ditches and Inlets	604.1.4.2
Culverts	604.1.4.3
Outlet Ditches and Channels	604.1.4.4
Historic and Archeological Preservation	107.4.6
Discussion	107.4.6.3
Legal References	107.4.6.1
Purpose	107.4.6.2
HMA Component Materials, Hot-Mix Asphalt Base	401.1.3
Aggregate Materials	401.1.3.1
Asphalt Materials	401.1.3.2
HMA Laydown and Compaction	401.3
Pre-Paving Considerations	401.3.1
Weather Considerations	401.3.2

	<u>Section</u>
Laydown and Compaction Equipment	401.3.3
Surface Preparation	401.3.4
HMA Mix Properties	401.3.5
Mix Placement	401.3.6
Compaction Operations	401.3.7
Inspection Guidelines	401.3.8
HMA Mix Properties	401.3.5
Material Proportioning Considerations	401.3.5.1
Temperature Considerations	401.3.5.2
Mix Inspection Guidelines	401.3.5.3
HMA Production and Hauling, Hot-Mix Asphalt Base	401.2
Plant Certifications	401.2.1
Plant Laboratory	401.2.2
HMA Production Operations: Continuous Vs. Batch	401.2.3
Plant Operation and Material Flow: Overview	401.2.4
Cold-Feed Systems	401.2.5
Asphalt Binder Storage and Supply Systems	401.2.6
Dryer-Drum Mixer	401.2.7
Batch-Mix-Plant	401.2.8
Continuous-Mix Plant	401.2.9
Emission-Control Systems	401.2.10
Surge and Storage Silos	401.2.11
Truck Loading and Hauling	401.2.12
Inspection Guidelines	401.2.13
Hot-Mix Asphalt (HMA) Materials	706
Hot-Mix Asphalt Inspector Programmed Instruction Manual	706.1
Compaction Testing Procedures	706.2
Hot-Mix Asphalt Base, Wearing, Patching and Leveling Courses	401
Description of Work	401.1.1
Types of HMA	401.1.2
HMA Component Materials	401.1.3
Quality Control	401.1.4
Job-Mix Formula (JMF)/Form T-400	401.1.5
Quality Control Plan	401.1.6
Maintenance of Traffic (MOT) Plan	401.1.7
Safety Considerations	401.1.8
Pre-Construction Conference	401.1.9
Communications During Project	401.1.10
HMA Production and Hauling	401.2
HMA Laydown and Compaction	401.3
Superpave Considerations	401.4
Records and Daily Reports	401.5
Measurement for Payment	401.6
Hot-Mix Asphalt Skid-Resistant Pavement	402
Description of Work	402.1.1
Aggregate and Asphalt Binder Materials	402.1.2
Records and Daily Reports	402.2
Measurement for Payment	402.3

I	<u>Section</u>
Inlets, Culverts and Manholes, Cleaning	240
Description of Work	240.1.1
Materials and Equipment.....	240.1.2
Public Safety Hazards	240.2
Cleaning Culverts, Inlets, and Manholes.....	240.3
Records and Daily Reports.....	240.4
Measurement for Payment.....	240.5
Inspection During Construction, Reinforcing Steel	602.2
Requirements.....	602.2.1
Supports and Ties	602.2.2
Splicing Considerations.....	602.2.3
Bar Clearance	602.2.4
Installation of Epoxy-Coated Rebars.....	602.2.5
Protection of Steel During Prolonged Exposure.....	602.2.6
Cleaning of Bars.....	602.2.7
Inspection Guidelines, Construction Layout Stakes	639.2
Overview	639.2.1
Centerline Stakes.....	639.2.2
Elevation Control Stakes	639.2.3
Slope Stakes	639.2.4
Right-of-Way and Utility Stakes	639.2.5
Roadway Cross-Sections.....	639.2.6
Borrow Cross-Sections.....	639.2.7
Pavement Stakes.....	639.2.8
Staking Culverts	639.2.9
Staking Bridges	639.2.10
Responsibilities for Staking.....	639.2.11
Final Surveys.....	639.2.12
Inspection Guidelines, Drilled Caisson Foundations.....	625.2
Preliminary Considerations	625.2.1
Drilling Operation	625.2.2
Caisson Reinforcement/Steel Casing	625.2.3
Concrete Placement.....	625.2.4
Inspection Guidelines, Hot-Mix Asphalt Base	401.2.13
Plant and Production Inspection.....	401.2.13.1
Loading and Hauling Inspection	401.2.13.2
Inspection Guidelines, Maintaining Traffic	636.2
Contract Documents	636.2.1
Speed Reduction Verification	636.2.2
Personnel Certification Checks	636.2.3
Emergency Contact Numbers.....	636.2.4
Crash Incident Reporting.....	636.2.5
Traffic Control Supervisor	636.2.6
Flaggers and Traffic Directors.....	636.2.7
Stockpiled Materials	636.2.8
Traffic Control Devices	636.2.9
Temporary Roads and Dust Palliatives	636.2.10
Inspection Guidelines, Painting Steel Structures	688.2

	<u>Section</u>
Cleaning Steel Surfaces.....	688.2.1
Brushing and Rolling.....	688.2.2
Spray Painting.....	688.2.3
Inspection Guidelines, Piling.....	616.2
Pre-Driving Considerations.....	616.2.2
Equipment Considerations.....	616.2.3
Pile Driving Considerations.....	616.2.4
Cast-in-Place Piles.....	616.2.5
Foundation Piles.....	616.2.6
Inspection Guidelines, Waterproofing.....	619.2
Dampproofing.....	619.2.1
Waterproofing Membrane.....	619.2.2
Inspector, Materials Control.....	702.4
Inspector's Daily Report (Form 442-Idr).....	702.4.1
Evidence of Inspection.....	702.4.2
Quality Control Plan.....	702.4.3
Internet Web Site, WVDOT.....	101.1.10
Intranet, WVDOH.....	101.1.11

J

Joint Considerations, Structural Concrete.....	601.4.4
Expansion Joints.....	601.4.4.1
Construction Joints.....	601.4.4.2
Joint Sealing Methods and Procedures.....	501.5.13
Joint Sealing Considerations.....	501.5.13.1
Silicone Sealant Application.....	501.5.13.2
Preformed Elastomeric Seal Installation.....	501.5.13.3

K

L

Laydown and Compaction Equipment, HMA.....	401.3.3
Paving Machines.....	401.3.3.1
Compaction Equipment.....	401.3.3.2
Miscellaneous Tools.....	401.3.3.3
Layout Stakes.....	639
Description of Work.....	639.1.1
Material Considerations.....	639.1.2
Inspection Guidelines.....	639.2
Records and Daily Reports.....	639.3
Legal Division, WVDOT.....	101.1.3
Legal Issues.....	107.2
Compliance With Laws.....	107.2.2
Construction Project Safety.....	107.2.3
Contractor's Responsibility for Work.....	107.2.1

	<u>Section</u>
Patented Devices, Materials, and Processes	107.2.5
Protection and Restoration of Property	107.2.4
Legal Relations and Responsibility to the Public	107
Employment and Labor Issues	107.3
Environmental Issues	107.4
Legal Issues	107.2
Personnel and Public Relations	107.1
Length Measurements, Conversion Factors	A.7
Letting, Award, and Execution of Contract	103.2
Award Meeting	103.2.2
Bid Opening	103.2.1
Distribution of Executed Contract	103.2.6
Execution By Contractor	103.2.4
Execution By DOH	103.2.5
Notice of Award	103.2.3
Lighting, Roadway	662
Description of Work	662.1.1
Materials Considerations	662.1.2
Inspection Guidelines	662.2
Records and Daily Reports	662.3
Linear Feet Covered Based on Tank Capacity and Width and Rate of Application	A.17
List of WVDOH Contract Administration Forms	A.21
LME Force Account Work Orders	110.3.3
Daily Report Records	110.3.3.3
Processing and Approval	110.3.3.2
Purpose	110.3.3.1
Load Limit Violations	109.2.3
Application of Specification	109.2.3.2
Motor Vehicle Laws	109.2.3.3
Preparation of Estimates	109.2.3.9
Price Adjustment	109.2.3.7
Project Records	109.2.3.8
Purpose	109.2.3.1
Truck Identification Numbers	109.2.3.6
Use of Adjustable Wheels	109.2.3.4
Weigh Tickets	109.2.3.5
Longitudinal Joint Construction	501.5.2
Tie-Bar/Tie-Bolt Assemblies	501.5.2.1
Keyways	501.5.2.2

M

Maintenance of Traffic	104.2, 636
Contractor Responsibilities	104.2.2
Description of Work	636.1.1
Fatal Crash Review Team	104.2.5
Flagger Certification	636.1.6
Inspection Guidelines	636.2

	<u>Section</u>
Materials Considerations	636.1.2
Monitoring Traffic Control During Construction.....	104.2.4
Public Relations.....	104.2.3
Records and Daily Reports.....	636.3
Traffic Control Plan.....	636.1.3
Traffic Control Supervisor	636.1.4
Work Zone Pre-Survey.....	636.1.5
Manholes and Inlets	605
Description of Work	605.1.1
Curbs, Gutters, Inlets, and Catch Basins	605.1.2
Storm Sewers.....	605.1.3
Materials Considerations.....	605.1.4
Inspection Guidelines	605.2
Records and Daily Reports.....	605.3
Measurement for Payment.....	605.4
Manholes, Inlets and Culverts, Cleaning	240
Description of Work	240.1.1
Materials and Equipment.....	240.1.2
Public Safety Hazards	240.2
Cleaning Culverts, Inlets, and Manholes.....	240.3
Records and Daily Reports.....	240.4
Measurement for Payment.....	240.5
Material Considerations, Piling.....	616.1.2
Steel Piles	616.1.2.1
Concrete Piles.....	616.1.2.2
Timber Piles	616.1.2.3
Pile Tips.....	616.1.2.4
Concrete.....	616.1.2.5
Material Considerations, Reinforcing Steel	602.1.2
Rebar Designations.....	602.1.2.1
Storage and Handling	602.1.2.2
Epoxy-Coated Rebars	602.1.2.3
Material Considerations, Structural Concrete.....	601.1.2
Source Approvals, Laboratory Numbers, and Certifications	601.1.2.1
Classes of Structural Concrete.....	601.1.2.2
Structural Concrete Mix Materials	601.1.2.3
Formwork and Falsework Materials.....	601.1.2.4
Material Delivered Not in-Place (MDNIP).....	109.2.1
Documentation Requirements	109.2.1.1
Payment Processing.....	109.2.1.3
Review and Approval.....	109.2.1.2
Material Differences, Superpave.....	401.4.1
Coarse-Graded Aggregates.....	401.4.1.1
Performance-Graded Binders	401.4.1.2
Modified Asphalt Binders	401.4.1.3
Material Storage and Handling, PCC.....	501.2.2
Aggregate Stockpiles.....	501.2.2.1
Moisture Considerations.....	501.2.2.2

	<u>Section</u>
Fly Ash and Cement Storage.....	501.2.2.3
Segregation/Acceptance Considerations.....	501.2.2.4
Materials and Equipment, Controlled Low Strength Equipment.....	219.1.2
Quality Control.....	219.1.2.1
Mix Design.....	219.1.2.2
Materials and Equipment, Crushed Aggregate Base Course.....	307.1.2
Materials.....	307.1.2.1
Quality Control and Acceptance.....	307.1.2.2
Equipment.....	307.1.2.3
Materials and Equipment, Excavation and Embankment.....	207.1.9
Quality Control Plan.....	207.1.9.1
Quality Control Testing.....	207.1.9.2
Materials Certification.....	111.1.2.2
Materials Control.....	702
Application of Specifications.....	702.1
Form 454.....	702.2
Standard Procedures and The Inspector.....	702.3
Duties of An Inspector, Materials Control.....	702.4
Instructions for Sampling and Testing.....	702.5
Visual Inspection.....	702.6
Identification of Samples.....	702.7
Material Rejected on The Project.....	702.8
Materials Procedures (MPS), Federal Highway Administration.....	101.7
Matting for Erosion Control.....	655
Description of Work.....	655.1.1
Materials Considerations.....	655.1.2
Inspection Guidelines.....	655.2
Records and Daily Reports.....	655.3
Measurement and Payment.....	109
Measurement of Quantities.....	109.1
Payment.....	109.2
Measurement for Payment, HMA.....	401.6
HMA Base and Wearing Course.....	401.6.1
Patching and Leveling Course.....	401.6.2
Contract Price Adjustments.....	401.6.3
Measurement for Payment, Mobilization.....	204.3
Description.....	204.3.1
Partial Payment Procedures.....	204.3.2
Partial Payment Example #1.....	204.3.3
Partial Payment Example #2.....	204.3.4
Measurement of Quantities.....	109.1
Measurement By Volume.....	109.1.1
Measurement By Weight.....	109.1.2
Units of Measurement.....	109.1.3
Medians.....	610
Requirements.....	610.1
Concrete Curbs and Medians.....	610.2.1
Asphalt Curbing.....	610.2.2

	<u>Section</u>
Records and Daily Reports.....	610.3
Meter Proportioning, Checking Accuracy	708.2
Meters Or Pumps for Bituminous Materials	708.2.1
Water Meter.....	708.2.2
Admixture Dispenser.....	708.2.3
Methods of Estimating Area of Fillets, Aprons, and Approaches	A.6
Milling, Grinding, and Grooving, Concrete Pavement Rehabilitation	550.2.4
Diamond Grinding.....	550.2.4.1
Diamond Grooving.....	550.2.4.2
Milling.....	550.2.4.3
Mix Placement, HMA.....	401.3.6
Paver Operations	401.3.6.1
Automatic Screed Controls.....	401.3.6.2
Mix Production and Hauling, Structural Concrete.....	601.2
Overview	601.2.1
Stockpiles and Material Bins.....	601.2.2
Aggregate Moisture Considerations	601.2.3
Scales and Automated Weighing Devices.....	601.2.4
Water and Admixture Dispensers.....	601.2.5
Concrete Mixers and Agitators.....	601.2.6
Ready-Mix Concrete	601.2.7
Volumetric Batch and Continuous Mixing Operations	601.2.8
Concrete Hauling Operations	601.2.9
Mix Property Checks and Adjustment, PCC	501.2.6
Field Laboratory Requirements.....	501.2.6.1
Aggregate Gradation Checks.....	501.2.6.2
Strength Checks and Adjustment	501.2.6.3
Consistency (Slump) Checks.....	501.2.6.4
Air Entrainment Checks	501.2.6.5
Yield Checks and Adjustment.....	501.2.6.6
Mix Proportioning, PCC	501.2.3
Aggregate and Cement Proportions.....	501.2.3.1
Water Proportion	501.2.3.2
Proportioning of Admixtures.....	501.2.3.3
Mixing Equipment and Methods, PCC	501.2.4
Typical Mixing Operation	501.2.4.1
Mixer Performance and Maintenance	501.2.4.2
Mixing Time, PCC.....	501.2.5
Truck-Mixer Operations.....	501.2.5.1
Other Mixing Operations.....	501.2.5.2
Mobilization.....	204
Description of Work.....	204.1.1
Materials and Equipment.....	204.1.2
Records and Daily Reports.....	204.2
Measurement for Payment.....	204.3
Mortar, Pneumatically Applied.....	623
Requirements.....	623.1
Inspection Guidelines	623.2

	<u>Section</u>
Records and Daily Reports	623.3
Mulching	652
Description of Work	652.1.1
Materials Considerations	652.1.2
Inspection Guidelines	652.2
Records and Daily Reports	652.3
 N	
 O	
Off-Site Materials, Approval	106.2.3
Pre-Approved Source	106.2.3.1
Unapproved Source	106.2.3.2
On-The-Job Training	107.3.2
Contractor Responsibilities	107.3.2.1
External Contract Compliance Section Responsibilities	107.3.2.2
Project Engineer/Supervisor Responsibilities	107.3.2.3
Open-Graded Free-Draining Base Course	311
Description of Work	311.1.1
Materials and Equipment	311.1.2
Construction Considerations	311.2
Records and Daily Reports	311.3
Measurement for Payment	311.4
Overhead Sign Supports	658
Description of Work	658.1.1
Materials Considerations	658.1.2
Inspection Guidelines	658.2
Records and Daily Reports	658.3
Overlaying of Portland Cement Concrete Bridge Decks	679
Description of Work	679.1.1
Materials Considerations	679.1.2
Inspection Guidelines	679.2
Records and Daily Reports	679.3
Organization, Administration and Policy	101
Federal Highway Administration	101.2
WVDOT Division of Highways	101.1
 P	
Painting Steel Structures	688
Description of Work	688.1.1
Materials and Equipment Considerations	688.1.2
Environmental and Hazard Considerations	688.1.3
Inspection Guidelines	688.2
Records and Daily Reports	688.3
Patching Operations, Concrete Pavement Repair	506.5

	<u>Section</u>
Joint Replacement	506.5.1
Placement of Reinforcing Steel	506.5.2
Placement of Concrete	506.5.3
Finishing Operations	506.5.4
Pavement Markings	663
Description of Work	663.1.1
Materials Considerations	663.1.2
Inspection Guidelines	663.2
Records and Daily Reports	663.3
Pavement Stakes	639.2.8
Hubs on Offset Line	639.2.8.1
Levels	639.2.8.2
Cross-Sections	639.2.8.3
Marking Guard Stakes	639.2.8.4
Stake-Out Book	639.2.8.5
Paving Limitations and Pavement Protection, PCC	501.1.9
Cold-Weathering Paving	501.1.9.1
Hot-Weathering Paving	501.1.9.2
Inclement Weather	501.1.9.3
Protection of Pavement	501.1.9.4
Paving Operation Considerations, Superpave	401.4.4
Laydown Operations	401.4.4.1
Compaction Operations	401.4.4.2
Payment	109.2
Material Delivered Not in-Place (MDNIP)	109.2.1
Specialized and Technical Equipment	109.2.2
Load Limit Violations	109.2.3
Purchase of Unused Material	109.2.4
Railroad and Utilities	109.2.5
PCC Mix Materials	501.1.3
Aggregate Materials	501.1.3.1
Cement Material	501.1.3.2
Mix Water	501.1.3.3
Admixture Materials	501.1.3.4
PCC Pavement Construction	501.5
Curing Methods and Procedures	501.5.10
Floating Operation	501.5.6
Joint Sealing Methods and Procedures	501.5.13
Longitudinal Joint Construction	501.5.2
Placement of Concrete	501.5.1
Placement of Reinforcing Steel	501.5.4
Removal of Forms	501.5.9
Sawing Longitudinal Joints	501.5.11
Sawing Transverse Joints	501.5.12
Straightedging and Surface Correction	501.5.7
Strike-Off and Consolidation	501.5.5
Surface Finishing Operation	501.5.8
Transverse Joint Construction	501.5.3

	<u>Section</u>
PCC Pavement Construction Materials.....	501.1.4
Types of Reinforcing Steel.....	501.1.4.1
Chairs and Ties.....	501.1.4.2
Coated Dowel Bars.....	501.1.4.3
Joint Tie-Bolt Assemblies.....	501.1.4.4
Curing Materials.....	501.1.4.5
Joint Sealant Materials.....	501.1.4.6
PCC Paving Equipment.....	501.4
Slip-Form Paving Equipment.....	501.4.1
Fixed-Form Paving Equipment.....	501.4.2
Vibrators.....	501.4.3
Hand Tools and Auxiliary Equipment.....	501.4.4
PCC Production and Hauling.....	501.2
Inspection and Certification of Production Facilities.....	501.2.1
Material Storage and Handling.....	501.2.2
Mix Proportioning.....	501.2.3
Mixing Equipment and Methods.....	501.2.4
Mixing Time.....	501.2.5
Mix Property Checks and Adjustment.....	501.2.6
Hauling Considerations.....	501.2.7
Permits.....	107.4.9
FAA Navigable Airspace Permit.....	107.4.9.6
National Pollutant Discharge Elimination System (NPDES) Construction (Section 402).....	107.4.9.3
Section 401 Water Quality Certification.....	107.4.9.2
Section 404 Army Corps Permit.....	107.4.9.4
Section 9 Navigable Waters Permit.....	107.4.9.5
Personnel and Public Relations.....	107.1
Employee-Contractor Relationship.....	107.1.2
Integrity of DOH Personnel.....	107.1.1
Public Relations.....	107.1.3
Personnel Responsibilities, Federal Highway Administration.....	101.3
Chief Project Inspector.....	101.3.3
Project Engineer/Supervisor.....	101.3.2
Project Inspector Trainee.....	101.3.5
Project Inspector.....	101.3.4
Personnel Training and Certification, Federal Highway Administration.....	101.4
DOH Materials Sampling/Testing.....	101.4.2
DOH Technician Training/Certification.....	101.4.1
Pile Driving Considerations.....	616.2.4
Pile Preparation.....	616.2.4.1
Pile Location and Orientation.....	616.2.4.2
Water Jetting.....	616.2.4.3
Pile Penetration.....	616.2.4.4
Precautions and Driving Difficulties.....	616.2.4.5
Cutting and Splicing Considerations.....	616.2.4.6
Pile-Hammer Specifications.....	A.20
Piling Walls.....	614
Requirements.....	614.1

	<u>Section</u>
Inspection Guidelines	614.2
Records and Daily Reports	614.3
Piling	616
Requirements	616.1
Inspection Guidelines	616.2
Records and Daily Reports	616.3
Pipe Culverts	604
Adverse Impacts of Water	604.1.2
Purpose of Highway Drainage Systems	604.1.3
Features of Highway Drainage Systems	604.1.4
Field Adjustments	604.1.5
Culvert Placement	604.2.2
Pipe Trenches	604.2.3
Rigid Pipe Culverts	604.2.4
Flexible Pipe Culverts	604.2.5
Backfilling and Compaction	604.2.6
Structural Plate Pipe, Pipe Arches, and Plate Arches	604.2.7
Jacking and Tunneling	604.2.8
Records and Daily Reports	604.3
Pipe Trenches	604.2.3
Trench Excavation	604.2.3.1
Safety Considerations	604.2.3.2
Pipe Bedding	604.2.3.3
Placement Considerations	604.2.3.4
Joining Pipe Sections	604.2.3.5
Inspection of Pipe in Place	604.2.3.6
Placement and Consolidation Operations, Structural Concrete	601.5
Mix Segregation	601.5.1
Use of Chutes and Troughs	601.5.2
Pumping of Concrete	601.5.3
Protection of Reinforcing Steel	601.5.4
Placement of Concrete in Bridge Deck Formwork	601.5.5
Placement of Concrete in Architectural Formwork	601.5.6
Placement of Concrete in Parapets	601.5.7
Placement of Concrete Under Water	601.5.8
Vibration and Consolidation of Concrete	601.5.9
Placement of Concrete	501.5.1
Lane-By-Lane Construction	501.5.1.1
Slip-Form Paving Considerations	501.5.1.2
Fixed-Form Paving Considerations	501.5.1.3
Placement Near Joints	501.5.1.4
Plane Figures, Area	A.4
Plant Operation and Material Flow, Hot-Mix Asphalt Base	401.2.4
Dryer-Drum Plants	401.2.4.1
Batch-Mix Plants	401.2.4.2
Continuous-Mix Plants	401.2.4.3
Plant Production Considerations, Superpave	401.4.2
Aggregate Stockpiles and Cold Feeds	401.4.2.1

	<u>Section</u>
Asphalt Binder Storage and Handling	401.4.2.2
Drying, Mixing, and Storage	401.4.2.3
Plastic Concrete, Characteristics	601.3.1
Concrete Consistency	601.3.1.1
Concrete Workability	601.3.1.2
Segregation and Bleeding	601.3.1.3
Plugging Gas, Oil, and Drilled Water Wells	665
Description of Work	665.1.1
Materials Considerations	665.1.2
Inspection Guidelines	665.2
Records and Daily Reports	665.3
Pneumatically Applied Mortar	623
Requirements	623.1
Inspection Guidelines	623.2
Records and Daily Reports	623.3
Pollution Control, Temporary	642
Description of Work	642.1.1
Materials Considerations	642.1.2
Inspection Guidelines	642.2
Records and Daily Reports	642.3
Portland Cement Concrete Pavement	501
Description of Work	501.1.1
Source Approvals, Laboratory Numbers, and Certifications	501.1.2
PCC Mix Materials	501.1.3
PCC Pavement Construction Materials	501.1.4
Governing Materials Procedures	501.1.5
Quality Control Considerations	501.1.6
Quality Acceptance Considerations	501.1.7
PCC Mix Design Plan	501.1.8
Paving Limitations and Pavement Protection	501.1.9
Maintenance of Traffic (MOT) Plan	501.1.10
Safety Considerations	501.1.11
Pre-Construction Conference	501.1.12
Communication During Project	501.1.13
PCC Production and Hauling	501.2
Pre-Paving Operations	501.3
PCC Paving Equipment	501.4
PCC Pavement Construction	501.5
Pavement Widening	501.6
Records and Daily Reports	501.7
Measurement for Payment	501.8
Portland Cement Concrete	705
Portland Cement Concrete Inspector Programmed Instruction Manual	705.1
Total, Absorbed and Free Moisture	705.2
Pre-Bid Activities	102.3
Distribution of Addendums	102.3.1
Field Review	102.3.2
Pre-Bid Conference	102.3.3

	<u>Section</u>
Pre-Bid Conference.....	102.3.3
Arrangement and Scheduling	102.3.3.3
Attendees	102.3.3.4
Determination of Need	102.3.3.2
Facilitation.....	102.3.3.5
Purpose	102.3.3.1
Precast Concrete Traffic Dividers.....	611
Requirements.....	611.1
Inspection Guidelines	611.2
Records and Daily Reports.....	611.3
Pre-Construction Activities.....	103.3
Distribution of Plans and Plan Revisions	103.3.1
Pre-Construction Conference	103.3.2
Pre-Survey of Work Zone	103.3.3
Pre-Construction Conference.....	103.3.2
Arrangement and Scheduling	103.3.2.2
Attendees	103.3.2.3
Facilitation.....	103.3.2.4
Purpose	103.3.2.1
Pre-Driving Considerations, Piling.....	616.2.2
Contract Documents	616.2.2.1
Staking and Utilities	616.2.2.2
Excavation and Embankments	616.2.2.3
Welder Certification	616.2.2.4
Preparation of Record of Contact.....	110.2.2
Contacts.....	110.2.2.1
Items, Quantities, Unit Prices.....	110.2.2.2
Location and Necessity of Work.....	110.2.2.3
Justification of Quantities.....	110.2.2.4
Justification of Unit Prices	110.2.2.5
Pre-Patching Operations, Concrete Pavement Repair.....	506.4
Removal of Deteriorated Concrete.....	506.4.1
Preparation of Underlying Course.....	506.4.2
Shoulder Preparation	506.4.3
Pre-Paving Operations, PCC.....	501.3
Subgrade Preparation	501.3.1
Setting Forms	501.3.2
Final Grade Conditioning.....	501.3.3
Pre-Pour Operations, Structural Concrete.....	601.4
Formwork and Falsework.....	601.4.1
Placement of Reinforcing Steel	601.4.2
Inspection of Embedded Fixtures.....	601.4.3
Joint Considerations	601.4.4
General Equipment Inspection	601.4.5
Screed Rail and Screed Inspection	601.4.6
End Dam and Bulkhead Inspection	601.4.7
Inspecting Height of Reinforcing Steel	601.4.8
Prequalification, Contractor.....	102.1

	<u>Section</u>
Contractor Prequalification Statement	102.1.2
Prequalification Process	102.1.1
Prestressed Concrete Members	603
Pretensioning/Posttensioning	603.1.1.2
Creep and Camber	603.1.1.3
Precast Girders	603.1.1.4
Cast-in-Place Girders	603.1.1.5
Segmental Construction	603.1.1.6
Material Considerations.....	603.1.2
Working Drawings	603.1.3
Manufacturer Certification	603.1.4
Equipment Inspection.....	603.1.5
Quality Control Program/Supervisor	603.1.6
Safety Precautions	603.1.7
Prestressed Member Fabrication Inspection.....	603.2
Storage and Handling Considerations	603.3
Records and Daily Reports.....	603.4
Prestressed Member Fabrication Inspection	603.2
Preparation of Formwork	603.2.1
Placement of Reinforcement and Prestressing Steel	603.2.2
Monitoring Jacking Force and Strand Elongation.....	603.2.3.2
Concrete Production and Hauling	603.2.4
Concrete Placement and Consolidation.....	603.2.5
Curing and Finishing	603.2.6
Dimensional Tolerance and Defects.....	603.2.7
Pre-Survey of Work Zone.....	103.3.3
Procedures for Materials Control.....	702
Processing and Approval of Change Orders	110.3.2
Administrative Charges.....	110.3.2.4
Exempt Federal-Aid and State Funded Projects.....	110.3.2.2
Non-Exempt Federal-Aid Projects	110.3.2.1
Sequencing	110.3.2.3
Program Administration Division, WVDOT	101.1.4
Project Advertisement.....	102.2
Issuance of Proposal Form	102.2.3
Notice to Contractor	102.2.1
Proposal Form	102.2.2
Project Files	111.1.5
Purpose	111.1.5.1
Storage and Protection.....	111.1.5.2
File Organization.....	111.1.5.3
Project Insurance.....	103.4
Insurance Requirements	103.4.1
Monitoring Insurance Requirements	103.4.2
Project Records and Daily Reports	111
Concurrent Project Finalization.....	111.3.1
Daily Report Entries.....	111.2
DOH Personnel Responsibilities	111.1.1

	<u>Section</u>
DOH Personnel Responsibilities	111.3.3
Inspector's Daily Reports (Form 442).....	111.1.3
Maintaining Project IDRS and Field Survey Books.....	111.1.4
Overview of Concurrent Finalization Process.....	111.3.2
Project Data	111.1.2
Project Files.....	111.1.5
Project Reference Materials	111.1.6
Review and Verification of Daily Reports	111.3
Review of "Current" Quantity Validation Report.....	111.3.5
Verification of Daily Report Entries	111.3.4
Project Schedules and Contract Time	108.2
Contract Time.....	108.2.2
Current Controlling Operation	108.2.3
Determination of Working Days	108.2.4
Suspension of Work	108.2.5
Unsatisfactory Progress.....	108.2.6
Prosecution and Progress	108
Project Schedules and Contract Time.....	108.2
Subcontracting Request (Form 403).....	108.1.2
PRS Workflow	105.6
Begin Construction.....	105.6.6
Change Orders.....	105.6.7
Contract Documents	105.6.1
Finalization.....	105.6.10
Give Notice to Proceed.....	105.6.5
Initialize Contract/Project Data	105.6.3
Initialize PRS Libraries	105.6.2
Schedule Pre-Construction Conference.....	105.6.4
Status Reports.....	105.6.9
Voucher Estimates.....	105.6.8
Pumping Operation, Bituminous Underseal	504.3.4
Subsealing Applications	504.3.4.1
Pavement Jacking Applications.....	504.3.4.2
Punch List	114.3
Contractor Punch List.....	114.3.1
DOH Punch List	114.3.2
Purchase of Unused Material	109.2.4
Application of Specifications	109.2.4.1
Change Orders.....	109.2.4.5
Disposition of Inventory Purchased By The Division.....	109.2.4.3
DOH-5	109.2.4.7
FHWA Participation.....	109.2.4.6
Preferred Disposition.....	109.2.4.2
Restocking Considerations	109.2.4.4
Purpose and Importance of Control of Materials.....	701
Compliance With Specifications	701.2
Uniform Relations With Contractors.....	701.3
Documentation for Expenditure of Public Funds.....	701.4

Q	<u>Section</u>
QC/QA and Materials Management	106.2
Approval and Delivery	106.2.5
Approval of Off-Site Materials	106.2.3
Laboratory Testing	106.2.4
Materials Management System	106.2.2
Project Materials Certification	106.2.7
Project-Level Documentation.....	106.2.6
Quality Control/Quality Assurance	106.2.1
Quality Acceptance Considerations, Concrete Pavement Repair	506.1.3
Compressive Strength Evaluation for Opening to Traffic.....	506.1.3.1
Surface Smoothness Evaluation for Acceptance.....	506.1.3.2
Quality Acceptance Considerations, PCC	501.1.7
Compressive Strength Evaluation for Opening to Traffic.....	501.1.7.1
Compressive Strength Evaluation for Acceptance	501.1.7.2
Pavement Thickness Evaluation for Acceptance.....	501.1.7.3
Procedures for Pavement Strength and Thickness Evaluation	501.1.7.4
Refilling Holes After Pavement Coring	501.1.7.5
Surface Smoothness Evaluation for Acceptance.....	501.1.7.6
Quality Control Considerations, PCC.....	501.1.6
Quality Control Plan.....	501.1.6.1
Technician and Inspector Certification	501.1.6.2
Quality Control/Quality Assurance Considerations, Structural Concrete.....	601.1.3
Quality Control Plan	601.1.3.1
Quality Acceptance	601.1.3.2
QC/QA Sampling and Testing	601.1.3.3
Quantities for Various Depths of Cylindrical Tanks in Horizontal Position	A.19
Quantities Per Mile	A.15
 R	
Railings	617
Requirements.....	617.1
Inspection Guidelines	617.2
Records and Daily Reports.....	617.3
Record of Contact	110.2
Need	110.2.1
Preparation.....	110.2.2
Review and Approval	110.2.3
Record of Contact and Change Orders	110
Change Orders.....	110.3
Legal Basis	110.1.1
Overview of Purpose	110.1.2
Project Records System.....	110.1.4
Record of Contact.....	110.2
Types of Change Orders.....	110.1.3
Records and Daily Reports, HMA	401.5
Plant Records and Reports.....	401.5.1

	<u>Section</u>
Laydown and Compaction Records and Reports	401.5.2
Records and Daily Reports, PCC	501.7
Production Records and Reports	501.7.1
Paving Records and Reports	501.7.2
Records Management	115
Federally Funded Projects	115.1.1
State-Funded Projects	115.1.2
Rehabilitation Methods, Concrete Pavement Rehabilitation	550.2
Crack and Pothole Repair	550.2.1
Full-Depth and Partial-Depth Patching	550.2.2
Subsealing and Pavement Jacking	550.2.3
Grinding, Grooving, and Milling	550.2.4
Cracking and Seating	550.2.5
Rubblizing	550.2.6
Shoulder Rehabilitation	550.2.7
Bridge Deck Removal	550.2.8
Bonded Concrete Overlays	550.2.9
Unbonded Concrete Overlays	550.2.10
Joints, Cracks, and Sealing	550.2.11
Underdrains/Longitudinal Edge Drains	550.2.12
Reinforcing Steel	602
Description of Work	602.1.1
Material Considerations	602.1.2
Order Lists and Bar Bending Considerations	602.1.3
Inspection During Construction	602.2
Records and Daily Reports	602.3
Removing Existing Pavement Surface	415
Description of Work	415.1.1
Maintenance of Traffic	415.1.2
Inspection Guidelines	415.2
Records and Daily Reports	415.3
Measurement for Payment	415.4
Reports	113
Tentative and Final Documentation	113.1
Required Samples and Tests	703
Minimum Sampling and Testing Requirements	703.2
Density Tests	703.3
Independent Assurance (IA) Sampling and Testing Program	703.4
Accuracy and Precision in Testing	703.5
Retaining Wall Systems	626
Description of Work	626.1.1
Materials Considerations	626.1.2
Design Submittals	626.1.3
Inspection Guidelines	626.2
Records and Daily Reports	626.3
Right-of-Way and Utility Stakes	639.2.5
Staking Right-of-Way During Construction	639.2.5.1
Utility Right-of-Way Stake-Out	639.2.5.2

	<u>Section</u>
Right-of-Way Fence.....	608
Requirements.....	608.1
Inspection Guidelines.....	608.2
Records and Daily Reports.....	608.3
Rigid Pipe Culverts.....	604.2.4
Material Inspection.....	604.2.4.1
Handling Considerations.....	604.2.4.2
Roadside Sign Supports.....	657
Description of Work.....	657.1.1
Materials Considerations.....	657.1.2
Inspection Guidelines.....	657.2
Records and Daily Reports.....	657.3
Roadway Excavation.....	207.3
Pre-Wetting.....	207.3.2
Controlled Blasting.....	207.3.3
Benches and Transition Points.....	207.3.4
Slides and Slipouts.....	207.3.5
Conduit.....	207.3.6
Roadway Lighting.....	662
Description of Work.....	662.1.1
Materials Considerations.....	662.1.2
Inspection Guidelines.....	662.2
Records and Daily Reports.....	662.3
Rock Embankment.....	207.6
Placement.....	207.6.1
Compaction.....	207.6.2
Rock Excavation.....	212
Description of Work.....	212.1.1
Protection and Preservation of Property.....	212.1.2
Shoring, Bracing and Cofferdams.....	212.1.3
Drainage.....	212.1.4
Erosion and Sediment Control.....	212.1.5
Blasting Considerations.....	212.1.6
Materials and Equipment.....	212.1.7
Hazards.....	212.2
Excavation for Footings.....	212.3
Disposal of Materials.....	212.4
Records and Daily Reports.....	212.5
Measurement for Payment.....	212.6
Roles and Responsibilities.....	105.1
Contractor Responsibilities.....	105.1.2
DOH and Contractor Relationship.....	105.1.3
DOH Responsibilities.....	105.1.1
Rolling, Operation.....	405.2.4
Brooming.....	405.2.4.1
Rolling.....	405.2.4.2

S	<u>Section</u>
Sample Pile-Hammer Specifications	A.20
Sample Supervisor and Inspector Daily Reports	A.22
Samples and Tests	703
Minimum Sampling and Testing Requirements	703.2
Density Tests	703.3
Independent Assurance (IA) Sampling and Testing Program	703.4
Accuracy and Precision in Testing	703.5
Sanitary Sewers	675
Description of Work	675.1.1
Materials Considerations	675.1.2
Inspection Guidelines	675.2
Records and Daily Reports	675.3
Sawing Transverse Joints	501.5.12
Initial Sawing	501.5.12.1
Secondary Sawing	501.5.12.2
Random Cracking	501.5.12.3
Scales, Batch Proportioning	708.1
Frequency of Checking and Documentation	708.1.2
Procedure for Checking Zero Balance and Sensitivity	708.1.3
Procedure for Checking Accuracy	708.1.4
Procedure for Checking Scales Using Load Cells	708.1.5
Schedules and Time Extensions	105.3
Contract Time Extensions	105.3.4
Project Control for Scheduled Projects	105.3.3
Project Schedule Requirements	105.3.1
Review of Detailed Construction Schedule	105.3.2
Scope of Work	104
Contract Changes and Incidentals	104.1
Maintenance of Traffic	104.2
Sealing Joints and Cracks in Concrete Pavement	503
Description of Work	503.1.1
Material Requirements	503.1.2
Other Considerations	503.1.3
Equipment Considerations	503.2
Construction Operations	503.3
Records and Daily Reports	503.4
Measurement for Payment	503.5
Seeding and Mulching	652
Description of Work	652.1.1
Materials Considerations	652.1.2
Inspection Guidelines	652.2
Records and Daily Reports	652.3
Seedling Planting	656
Description of Work	656.1.1
Materials Considerations	656.1.2
Inspection Guidelines	656.2
Records and Daily Reports	656.3
Setting Forms, PCC	501.3.2

	<u>Section</u>
Form Condition and Acceptability	501.3.2.1
Form Stability Considerations	501.3.2.2
Tamping and Seating Operation	501.3.2.3
Width, Alignment, and Grade Checks	501.3.2.4
Cleaning and Oiling Forms	501.3.2.5
Sewers, Sanitary	675
Description of Work	675.1.1
Materials Considerations	675.1.2
Inspection Guidelines	675.2
Records and Daily Reports	675.3
Shoring, Bracing and Cofferdams	212.1.3
Cofferdams	212.1.3.1
Construction Plans	212.1.3.2
Pumping	212.1.3.3
Shoulders and Ditches	229
Description of Work	229.1.1
Materials and Equipment	229.1.2
Public Safety Hazards	229.2
Shoulders and Ditches	229.3
Records and Daily Reports	229.4
Measurement for Payment	229.5
Shrub Planting	654
Description of Work	654.1.1
Materials Considerations	654.1.2
Inspection Guidelines	654.2
Records and Daily Reports	654.3
Sidewalks	609
Requirements	609.1
Inspection Guidelines	609.2
Records and Daily Reports	609.3
Sign Lighting	659
Description of Work	659.1.1
Materials Considerations	659.1.2
Inspection Guidelines	659.2
Records and Daily Reports	659.3
Sign Supports, Overhead	658
Description of Work	658.1.1
Materials Considerations	658.1.2
Inspection Guidelines	658.2
Records and Daily Reports	658.3
Sign Supports, Roadside	657
Description of Work	657.1.1
Materials Considerations	657.1.2
Inspection Guidelines	657.2
Records and Daily Reports	657.3
Slope and Foundation Protection	218
Description of Work	218.1.1
Materials and Equipment	218.1.2

	<u>Section</u>
Slope Protection	218.2
Foundation Protection	218.3
Records and Daily Reports	218.4
Measurement for Payment	218.5
Slope Equations	A.3
Slope Protection	218.2
General	218.2.1
Riprap/Grouted Riprap	218.2.2
Gabions	218.2.3
Crushed Rock	218.2.4
Concrete	218.2.5
Engineering Fabric	218.2.6
Slopes, Shoulders, Ditches	207.8.3
Slopes	207.8.3.1
Flattening Slopes	207.8.3.2
Shoulders	207.8.3.3
Ditches	207.8.3.4
Solids, Surface and Volume	A.5
Specific Gravity and Weight Per Gallon, Asphalt	A.14
Square Yards of Road Surface for Various Road Widths	A.16
Stakes, Construction Layout	639
Description of Work	639.1.1
Material Considerations	639.1.2
Inspection Guidelines	639.2
Records and Daily Reports	639.3
Staking Bridges	639.2.10
Control System	639.2.10.1
Preliminary Checking	639.2.10.2
Setting Stakes	639.2.10.3
Checking Stake-Out	639.2.10.4
Staking Culverts	639.2.9
Preliminary Studies for Pipe Culverts	639.2.9.1
Placing Stakes for Pipe Culverts	639.2.9.2
Records for Pipe Culverts	639.2.9.3
Stakes for Box Culverts	639.2.9.4
Other Work for Box Culverts	639.2.9.5
Steel Grid Flooring	621
Description of Work	621.1.1
Materials Considerations	621.1.2
Working Drawings	621.1.3
Inspection Guidelines	621.2
Records and Daily Reports	621.3
Steel Structures	615
Requirements	615.1
Field Inspection Guidelines, Steel Structures	615.2
Records and Daily Reports	615.3
Strike-Off and Consolidation, PCC	501.5.5
Machine Methods	501.5.5.1

	<u>Section</u>
Hand Methods	501.5.5.2
Consolidation of Concrete	501.5.5.3
Structural Concrete	601
Description of Work	601.1.1
Material Considerations	601.1.2
Quality Control/Quality Assurance Considerations	601.1.3
Structural Concrete Mix Design	601.1.4
Formwork and Falsework Plans	601.1.5
Pour Sequence Plan for Concrete Structures	601.1.6
Weather Considerations and Protection of Concrete	601.1.7
Preparation for Emergency Stoppage of Work	601.1.8
Mix Production and Hauling	601.2
Mix Proportioning and Adjustment	601.3
Characteristics of Hardened Concrete	601.3.2
Field Testing and Concrete Mix Adjustments	601.3.3
Pre-Pour Operations	601.4
Placement and Consolidation Operations	601.5
Finishing and Curing Operations	601.6
Records and Daily Reports	601.7
Structural Plate Pipe, Pipe Arches, and Plate Arches	604.2.7
Preliminary Studies	604.2.7.1
Pipe Bedding	604.2.7.2
Pipe Assembly	604.2.7.3
Strutting Considerations	604.2.7.4
Field Paving of Invert	604.2.7.5
Structure Excavation	212
Description of Work	212.1.1
Protection and Preservation of Property	212.1.2
Shoring, Bracing and Cofferdams	212.1.3
Drainage	212.1.4
Erosion and Sediment Control	212.1.5
Blasting Considerations	212.1.6
Materials and Equipment	212.1.7
Hazards	212.2
Excavation for Footings	212.3
Disposal of Materials	212.4
Records and Daily Reports	212.5
Measurement for Payment	212.6
Subcontracting Request (Form 403)	108.1.2
Allowable Subcontracting Arrangements	108.1.1
Documentation Requirements	108.1.2.2
Review and Approval	108.1.2.3
Submittal	108.1.2.1
Subgrade Preparation	228
Description of Work	228.1.1
Materials and Equipment	228.1.2
Records and Daily Reports	228.3
Measurement for Payment	228.4

	<u>Section</u>
Subgrade Preparation, PCC	501.3.1
Fixed-Form Paving Considerations	501.3.1.1
Slip-Form Paving Considerations.....	501.3.1.2
Superpave Considerations, HMA	401.4
Material Differences.....	401.4.1
Plant Production Considerations	401.4.2
Loading and Hauling Considerations	401.4.3
Paving Operation Considerations	401.4.4
Inspection Guidelines	401.4.5
Surface and Volume of Solids	A.5
Surface Finishing Operation, PCC.....	501.5.8
Surface Texturing.....	501.5.8.1
Edging at Forms and Joints	501.5.8.2
Application of Station Numbers.....	501.5.8.3
Surface Preparation, HMA.....	401.3.4
Sealing	401.3.4.1
Patching and Leveling	401.3.4.2
Scratch Course.....	401.3.4.3
Cleaning and Sweeping.....	401.3.4.4
Tack Coat	401.3.4.5
Surface Treatments	405
Description of Work.....	405.1.1
Aggregate and Bituminous Materials.....	405.1.2
Weather Considerations.....	405.1.3
Maintenance of Traffic	405.1.4
Equipment Considerations	405.1.5
Construction Operations.....	405.2
Records and Daily Reports.....	405.3
Measurement for Payment.....	405.4
Surge and Storage Silos, Hot-Mix Asphalt Base	401.2.11
Surge Silos.....	401.2.11.1
Storage Silos.....	401.2.11.2
Conveyor Systems.....	401.2.11.3
Charging Operations.....	401.2.11.4
Discharge Operations	401.2.11.5
Production Considerations	401.2.11.6
Surveys, Final	639.2.12
Final Section Locations	639.2.12.2
Final Section Measurements.....	639.2.12.3
Terminal Points	639.2.12.4
Intermediate Cross-Sections.....	639.2.12.5
Slides	639.2.12.6
Benches	639.2.12.7
Structures	639.2.12.8
Field Checking Elevations of Ties	639.2.12.9
Field Investigation of Differences	639.2.12.10
Miscellaneous Measurements	639.2.12.11
Plotting and Compaction	639.2.12.12

T	<u>Section</u>
Tack Coat	408
Description of Work	408.1.1
Aggregate and Bituminous Materials	408.1.2
Weather Considerations	408.1.3
Maintenance of Traffic	408.1.4
Equipment Considerations	408.1.5
Construction Operations	408.2
Records and Daily Reports	408.3
Measurement for Payment	408.4
Temporary Pollution Control	642
Description of Work	642.1.1
Materials Considerations	642.1.2
Inspection Guidelines	642.2
Records and Daily Reports	642.3
Tentative and Final Documentation	113.1
Overview	113.1.1
Working Time Report (Form 458)	113.1.2
Contractor's Performance Report (Form 420)	113.1.3
Materials and Labor Used (Form FHWA 47)	113.1.4
Contract Completion (Form 416)	113.1.5
Letter of Certification of Materials	113.1.6
As-Built Plans	113.1.7
Quantity Validation Report (With Overruns, Underruns, Reasons)	113.1.8
Tax Releases	113.1.9
Tests	703
Minimum Sampling and Testing Requirements	703.2
Density Tests	703.3
Independent Assurance (IA) Sampling and Testing Program	703.4
Accuracy and Precision in Testing	703.5
Time Extensions	105.3
Contract Time Extensions	105.3.4
Project Control for Scheduled Projects	105.3.3
Project Schedule Requirements	105.3.1
Review of Detailed Construction Schedule	105.3.2
Topsoil, Furnishing and Placing	651
Description of Work	651.1.1
Materials Considerations	651.1.2
Inspection Guidelines	651.2
Records and Daily Reports	651.3
Traffic Bound Base Course or Shoulder	308
Description of Work	308.1.1
Materials and Equipment	308.1.2
Construction Considerations	308.2
Records and Daily Reports	308.3
Measurement for Payment	308.4
Traffic Control Devices	636.2.9
Maintenance of Devices	636.2.9.1
Pavement Markings	636.2.9.2

	<u>Section</u>
Construction Signing	636.2.9.3
Channelizing Devices	636.2.9.4
Flashing Arrows and Message Signs	636.2.9.5
Temporary Barriers and Guardrail	636.2.9.6
Impact Attenuators	636.2.9.7
Pilot Truck and Shadow Vehicles	636.2.9.8
Traffic Control Plan	636.1.3
Content and Purpose	636.1.3.1
Revision and Review	636.1.3.2
Traffic Safety Devices	664
Description of Work	664.1.1
Materials Considerations	664.1.2
Inspection Guidelines	664.2
Records and Daily Reports	664.3
Traffic Signals	660
Description of Work	660.1.1
Materials Considerations	660.1.2
Inspection Guidelines	660.2
Records and Daily Reports	660.3
Traffic Signs and Delineators	661
Description of Work	661.1.1
Materials Considerations	661.1.2
Inspection Guidelines	661.2
Records and Daily Reports	661.3
Transverse Joint Construction	501.5.3
Dowel Assemblies	501.5.3.1
Transverse Contraction Joints	501.5.3.2
Transverse Construction Joints	501.5.3.3
Transverse Expansion Joints	501.5.3.4
Expansion Joints for Structures	501.5.3.5
Transverse Joints, Sawing	501.5.12
Initial Sawing	501.5.12.1
Secondary Sawing	501.5.12.2
Random Cracking	501.5.12.3
Tree and Shrub Planting	654
Description of Work	654.1.1
Materials Considerations	654.1.2
Inspection Guidelines	654.2
Records and Daily Reports	654.3
Triangles, Trigonometric Solution	A.2
Trigonometric Functions	A.1
Trigonometric Solution of Triangles	A.2
Truck Loading and Hauling, Hot-Mix Asphalt Base	401.2.12
Haul Trucks	401.2.12.1
Release Agents	401.2.12.2
Covers and Insulation	401.2.12.3
Truck Scales	401.2.12.4
Loading	401.2.12.5

	<u>Section</u>
Tunnel Liner Plate.....	612
Requirements.....	612.1
Inspection Guidelines.....	612.2
Records and Daily Reports.....	612.3
U	
Underdrains.....	606
Description of Work.....	606.1.1
Design Location.....	606.1.2
Field Adjustment.....	606.1.3
Material Considerations.....	606.1.4
Protection of Underdrains.....	606.2.1
Staking and Adjustments.....	606.2.2
Trenching and Bedding.....	606.2.3
Pipe Placement.....	606.2.4
Aggregate Filter Material.....	606.2.5
Backfilling.....	606.2.6
Junction and Spring Boxes.....	606.2.7
Outlet Pipe and Slope Walls.....	606.2.8
Edge Drains.....	606.2.9
Blind Drains.....	606.2.10
Aggregate Filled Fabric Underdrain.....	606.2.11
Free Draining Base Trench.....	606.2.12
Records and Daily Reports.....	606.3
Utilities.....	105.2
Utility Stakes.....	639.2.5
Staking Right-of-Way During Construction.....	639.2.5.1
Utility Right-of-Way Stake-Out.....	639.2.5.2
V	
Vehicular Equipment, Federal Highway Administration.....	101.5.2
Motor Pool.....	101.5.2.1
Servicing and Operation.....	101.5.2.2
State-Owned Vehicle Crashes.....	101.5.2.3
Vibration and Consolidation of Concrete.....	601.5.9
Spading Considerations.....	601.5.9.1
Use of Vibrators.....	601.5.9.2
Vibrators.....	501.4.3
Vibrator Frequency.....	501.4.3.1
Spud Vibrators.....	501.4.3.2
Vine and Ground Cover Planting.....	653
Description of Work.....	653.1.1
Materials Considerations.....	653.1.2
Inspection Guidelines.....	653.2
Records and Daily Reports.....	653.3

	<u>Section</u>
Volume Measurements, Conversion Factors	A.9
Volume of Solids	A.5
 W	
Water.....	637
Description of Work	637.1.1
Materials Considerations	637.1.2
Inspection Guidelines	637.2
Records and Daily Reports	637.3
Water, Density and Viscosity	A.18
Water Quality.....	107.4.4
Discussion	107.4.4.3
Legal References	107.4.4.1
Purpose	107.4.4.2
Waterline Installation.....	670
Description of Work	670.1.1
Materials Considerations	670.1.2
Inspection Guidelines	670.2
Records and Daily Reports	670.3
Waterproofing.....	619
Requirements.....	619.1
Inspection Guidelines	619.2
Records and Daily Reports.....	619.3
Weather Considerations and Protection of Concrete	601.1.7
Requirements for Cold-Weather Concreting.....	601.1.7.1
Requirements for Hot-Weather Concreting.....	601.1.7.2
Concreting During Inclement Weather	601.1.7.3
Weight Measurements, Conversion Factors	A.10
Weight Per Gallon, Asphalt Specific Gravity and	A.14
Welding Considerations, Field.....	615.2.4
Welding Procedure	615.2.4.1
Quality Welds.....	615.2.4.2
Defective Welds	615.2.4.3
Inspection Guidelines	615.2.4.4
Wells, Plugging Gas, Oil, and Drilled Water.....	665
Description of Work	665.1.1
Materials Considerations.....	665.1.2
Inspection Guidelines	665.2
Records and Daily Reports.....	665.3
Wet Excavation.....	212
Description of Work	212.1.1
Protection and Preservation of Property.....	212.1.2
Shoring, Bracing and Cofferdams	212.1.3
Drainage	212.1.4
Erosion and Sediment Control.....	212.1.5
Blasting Considerations.....	212.1.6
Materials and Equipment.....	212.1.7

	<u>Section</u>
Hazards.....	212.2
Excavation for Footings.....	212.3
Disposal of Materials.....	212.4
Records and Daily Reports.....	212.5
Measurement for Payment.....	212.6
WV DOT Division of Highways.....	101.1
Assistant Commissioner.....	101.1.6
Business Manager.....	101.1.2
Deputy Commissioner.....	101.1.1
Deputy State Highway Engineer — Development.....	101.1.8
Deputy State Highway Engineer — Operations.....	101.1.7
District/Project Organization.....	101.1.9
Executive Assistants for Equipment and Special Assignments.....	101.1.5
Internet Web Site.....	101.1.10
Intranet.....	101.1.11
Legal Division.....	101.1.3
List of WVDOH Contract Administration Forms.....	A.21
Program Administration Division.....	101.1.4

X, Y, Z